

Dynamic Fiber Conversion System
10T-10FL User Manual

DFCS 10T-10FL Dual Fiber Modules			
Connector Type	Distances	ST	SC
MM	2 km	LMC3018C	LMC3021C
MM	5 km	LMC3019C	-
SM	30 km	LMC3020C	LMC3022C
SM	60 km	-	TBD
SM	120 km	-	TBD

CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)

FREE technical support 24 hours a day, 7 days a week; Call **724-746-5500** or fax **724-746-0746**

Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018

Web site: **www.blackbox.com**
E-mail: **info@blackbox.com**

Description:

The DFCS 10T-10FL converters support the IEEE 802.3 Ethernet standard and convert 10Base-T unshielded twisted pair (UTP) to 10Base-FL fiber optic cabling. Models are available for multimode (MM) and single-mode (SM) dual fiber and single-mode single-fiber.

The 10T-10FL supports Half-Duplex and Full-Duplex modes and features a cross-over UTP switch for easy attachment to hubs, switches and workstations.

The 10T-10FL can be used in an unmanaged or managed fashion. When unmanaged, the 10T-10FL can be installed in a chassis without a SNMP and Telnet Management Module (MGT). To be managed, a MGT module must be installed in the same chassis.

Link Modes:

In order to accommodate different user needs, the 10T-10FL supports three different linking modes.

In "Link Segment" (LS), sometimes referred to as the "Normal" mode, a converter port transmits a "Link" signal independently of any received "Link" at any other port. For example, the UTP transmits a "Link" regardless of the fiber receiving a "Link" [Fig 1(b)].

In "Link Propagate" (LP), sometimes referred to as "Link Loss Carry Forward", a converter port transmits a "Link" signal only when receiving a "Link" at its other port. For example, the UTP transmits a "Link" only when receiving a "Link" at the fiber port. [Fig 1(c)].

In "Remote Fault Detection" (RFD), the UTP port transmits a "Link" signal only when receiving a "Link" at the fiber port. The fiber port transmits a "Link" only when receiving "Link" signals both at the fiber port and the UTP port. As a result, fiber faults (no "Link" received at the fiber) are looped-back and can be reported to the network's core [Fig 1(d)].

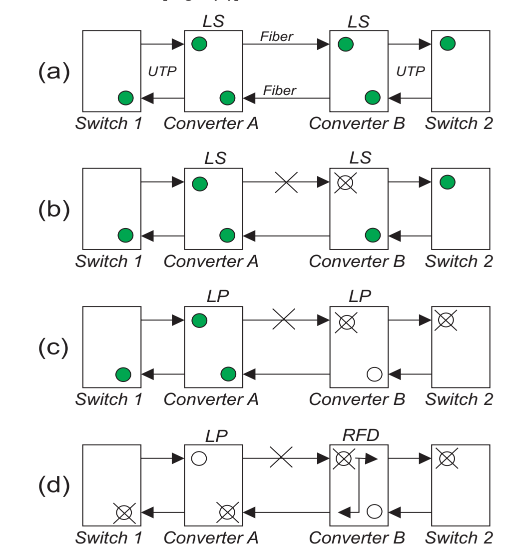


Fig 1: Link Modes

Front Panel Dip-Switch Settings:

Link Segment = Link Seg
Normal = Norm
Link Prop = Link Propagate
R/Flt Det = remote Fault Detect

Fig 2: Dip-Switches

"Link Seg/Link Prop" Dip-Switch:

When in the "Link Seg" (factory setting) position (and when the "R/Flt Det" dip-switch is in the "Norm" position), the LS mode is selected. When in the "Link Prop" position, LP mode is enabled.

"R/Flt Det" Remote Fault Detection Dip-Switch:

When in the "R/Flt Det" position, the RFD mode is selected. When in the "Norm" (factory setting) position, RFD is disabled.

Note that setting the "Link Seg/Link Prop" to "Link Prop" (LP mode) and the " R/Flt Det" to "R/Flt Det" (RFD mode) on the same module is an illegal mode that will result in unpredictable behavior.

Note that connecting two converters when both are set to RFD mode is illegal and will cause a "deadly embrace" lockup.

RJ45 "Cross-Over" Switch:

When connecting the UTP port to a hub or switch, set switch to "Straight-Through" (factory setting). When connecting to a workstation, set it to "Cross-Over."

LED Indicators:

LED	Color	Description
Pwr:	Yellow	On--Power on
Lk/Act (F/O):	Green	On--Link; Blink--Activity
Lk/Act (UTP):	Green	On--Link; Blink--Activity

Mounting and Cable Attachment:

The DFCS modules are hot-swappable and can be installed into any DFCS chassis.

1. Using the chassis' module guides for alignment, insert the module into the selected slot and secure using the front panel fastener screw.
2. Using a Category 5 cable attach the UTP port to a 10Base-T Ethernet device.
3. Using a multimode or single-mode dual-fiber cable as required per the converter type, attach the fiber port to a 10Base-FL mating Ethernet device. The transmit (Tx) must attach to the receive side of the mating device and the receive (Rx) must attach to the transmit side.
4. Single fiber (SF) converters must be used in matched pairs. The transmit (Tx) and receive (Rx) wavelengths of one converter must match the receive (Rx) and transmit (Tx) wavelengths of the mating converter.

SPECIFICATIONS	
Model	**10T-10FL**
Protocols	10Base-FL, 10Base-T
Copper Connectors	RJ-45
Fiber Connectors	ST or SC
Controls	UTP cross-over, LS/LP, RFD
LED Displays	Pwr, Fiber link/act, UTP link/act
Dimensions	W:0.85" x D:4.5" x H:2.8"
Weight	8 oz.
Compliance	UL, CE, FCC Class A, NEBS 3
Temperature -Operating -Storage	 0 to 50 C -40 to 80 C
Altitude	0-10,000 ft
MTBF (hrs)	920,000

Notes:

TRADEMARKS

All applied-for and registered trademarks are the property of their respective owners.

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numéirques de las classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedelstales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra or superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u ostros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precación debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y

receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    A: El cable de poder o el contacto ha sido dañado; u
    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    C: El aparato ha sido expuesto a la lluvia; o
    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    E: El aparto ha sido tirado o su cubierta ha sido dañada.

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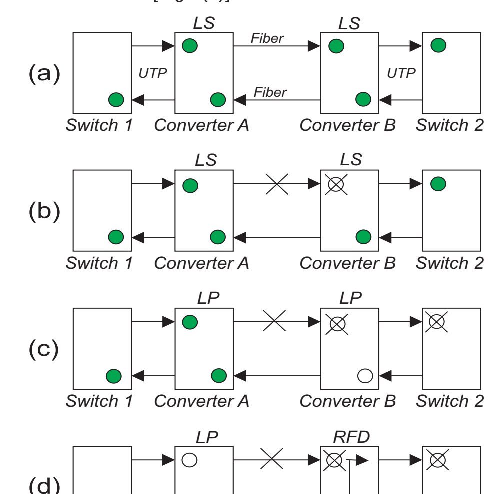


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